
Successful Implementation Measurement Project: Results of Environmental Scan to Identify Implementation Science Factors Important for Federally Funded Initiatives

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Introduction

The Successful Implementation Measurement Project (SIMP) is funded by the Office of the Assistant Secretary for Planning and Evaluation (ASPE) within the U.S. Department of Health and Human Services (HHS). The primary goal of SIMP is to identify a manageable list of implementation science constructs and associated measures of these constructs relevant for successful implementation of evidence-based interventions. Such constructs and measures could be potentially used for selecting, supporting, and monitoring grantees (e.g., in funding opportunity announcements, and when providing training and technical assistance for federally funded initiatives). With this goal in mind, the American Institutes for Research (AIR), which was awarded the contract for this work, conducted a comprehensive environmental scan of published and gray literature to identify a preliminary list of implementation science constructs. This paper presents the results of that environmental scan.

Our environmental scan was guided by the population, intervention, comparison, and outcome (PICO) model (Higgins & Green, 2011). The model suggests building a review question that specifies the target population, intervention, comparison/control conditions, and outcome. Three of these four criteria (all but comparison/control conditions) apply to the current search. On the basis of the PICO model, we developed the following research question: Which factors are the most strongly and consistently related to successful implementation and effectiveness of federally funded programs of interest to HHS?

Description of the Search Process

Below, using the PICO model, we present information related to the way we defined the target populations, interventions, implementation science constructs, and outcomes.

Population included all children, youth, and their families.

Intervention included the programs that are of interest to HHS, defined in collaboration with ASPE.

Comparison did not apply to this search, since we were not comparing the implementation science factors identified to another set of factors. We replaced that component with the implementation constructs that had been identified through relevant efforts and initiatives focused on successful implementation and/or scale-up of evidence-based interventions. We refined the list of constructs with feedback from ASPE.

Outcome included results being targeted for the type of interventions for the major program areas on which HHS focuses.

Population

We determined, in collaboration with ASPE, that we wanted to include all children, youth, and their families who might be recipients of HHS programs and services. For more details on our

population parameters, please see Table 1 in Appendix C: Intervention Program Areas and Related Outcomes).¹

Intervention

For the majority of implementation science constructs, limiting the search to the types of interventions described in Appendix C, Table 1 below produced less than 50 references. Thus, we only used this criterion for five implementation science constructs: *evidence strength and quality*, *relative advantage*, *complexity/feasibility*, *planning*, and *implementation fidelity*.

For these five constructs, we focused our search on articles that described interventions and outcomes within HHS's areas of focus. These included interventions/programs/practices/services in

- food and drug administration, obesity, nutrition;
- wellness promotion/disease prevention;
- health care, physical/mental/minority women's health;
- sexually transmitted/infectious disease;
- toxic substances, substance/drug abuse;
- early childhood education, home visiting, maternal health, fatherhood;
- child welfare, foster care, adoption, housing; and
- domestic/dating/teen dating/youth violence, intentional injury, bullying, and aggression.

Implementation Science Constructs

A set of 31 implementation science constructs was developed in collaboration with ASPE on the basis of (1) the existing literature on implementation science and evidence-based programs; (2) relevant federal efforts (see *Relevant Efforts, Initiatives, and Organizations Focused on Successful Implementation and/or Scale-Up of Evidence-Based Interventions* from the solicitation for this project developed by ASPE listed in Appendix B); and (3) the practicality/usability, malleability, relevance to multiple program areas within HHS, and measurability of each construct. We organized constructs into factors related to three categories: (1) the context, (2) the program, and (3) the process. The final list of constructs that was included in our environmental scan is presented in Table 1.

¹ We initially anticipated specifying additional population criteria when looking at programs targeting runaway/homeless populations, youth in state custody, and victims of child abuse/neglect to hone in on the most relevant articles. This however, did not prove fruitful, so we did not specify any population criteria.

Outcome

For the majority of implementation science constructs, limiting the search to the types of outcomes described in Appendix C, Table 1 produced less than 50 references. Thus, we only used this criterion for the five implementation science constructs described above.

Table 1. Final Search Terms Used for Each Implementation Science Construct

Implementation science construct	Definition of the construct	Final search terms used
Factors related to the program		
Evidence strength & quality	The availability, type, quality, and validity of information supporting the probability that the intervention will have desired outcomes	("evidence strength" OR "evidence based") AND "quality of evidence" / "evidence credibility" OR ("evidence quality" AND "implementation") OR ("evidence quality" AND "intervention")
Relative advantage	Stakeholders' perception of the advantage of implementing the intervention, including the return on investment, versus an alternative solution.	"relative advantage" OR "advantage"
Adaptability	The degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs.	"adaptability"
Triability	The ability to test the intervention on a small scale in the organization and to be able to reverse course (undo implementation) if warranted	"triability" OR "small scale program implementation" OR "ability to pilot" OR "testability"
Complexity/feasibility	Perceived difficulty of implementation, reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required for implementation	"complexity" OR "feasibility"
Presence of core components	The identification, clear description, and operationalization of the core program components that can be taught, learned, and implemented in typical settings, as well as what cannot be changed in the program	"core components" OR "core kernels"
Cost	Costs of the intervention and costs associated with implementing the intervention, including investment, supply, response cost, and opportunity costs	"intervention cost" OR "implementation cost" OR "program cost" OR "program expense" OR "intervention expense" OR "implementation expense"
Factors related to the context		
Skills, competencies, and expertise	The technical, social, and emotional skills (e.g., cultural competence) and expertise with related evidence-based programs of practitioners implementing the EBPs	("practitioner skills" OR "practitioner competencies" OR "practitioner expertise" OR "interventionist skills" OR "interventionist competencies" OR "interventionist expertise" OR ("skills" AND "competencies" AND "expertise"))

Implementation science construct	Definition of the construct	Final search terms used
Addressing client needs	The extent to which an organization accurately knows, prioritizes, and addresses client/consumer needs, as well as barriers and facilitators to meeting these needs	"client needs" OR "client resources" OR "patient needs" OR "patient resources"
External policy and incentives	A broad construct that includes external strategies to spread interventions, including policy and regulations (governmental or other central entity), external mandates, recommendations and guidelines, pay-for-performance, collaboratives, and public or benchmark reporting	"external policy" OR "external incentives" OR "external mandates" OR "external guidelines" OR "pay-for-performance"
Organizational structural characteristics	The social architecture, age, maturity, and size of an organization—including physical environment	"structural characteristics" OR "organizational characteristics" OR "organizational maturity"
Organizational communications	The nature and quality of formal and informal exchanges within an organization and the nature and quality of webs or social networks	"internal networks" OR "internal communications" OR "internal linkages" OR "internal relationships" OR "organization relationships" OR "organization support" OR "organization linkages"
Organizational culture	Norms, values, traditions, and basic assumptions of a given organization	"organizational culture" AND "organizational norms" OR "organizational culture" AND "organizational values"
Relative priority	Individuals' shared perception of the importance of the implementation within the organization	"relative priority" OR "perception of importance"
Organizational incentives and rewards	Extrinsic incentives such as goal-sharing awards, performance reviews, promotions, and raises in salary, as well as less tangible incentives, such as increased stature or respect	"organizational incentives" OR "organizational rewards" OR "performance reviews" OR "goal-sharing awards" OR "promotions" OR "raises" OR "salary raise" OR "pay increase" OR "merit pay"
Organizational readiness	The extent to which staff members within an organization are both willing and able to implement particular practices, including motivation, general capacity, and innovation-specific capacity	"organizational readiness"
Role of leadership	Commitment, involvement, and accountability of leaders and managers involved in implementation	"leadership engagement" OR "leadership support" OR "leadership commitment" OR "leadership involvement"

Implementation science construct	Definition of the construct	Final search terms used
Available resources	The level of resources dedicated to implementation and ongoing operations, including money, training, education, physical space, time, and budget development	"available resources" OR "dedicated resources"
Access to knowledge and information	Ease of access to digestible information and knowledge about the intervention and ways to incorporate them into work tasks	"program information" OR "intervention information"/("organizational knowledge" OR "codified knowledge" OR "public knowledge") AND ("implementation" OR "intervention")
Factors related to the implementation process		
Planning	The degree to which a scheme or method of behavior and tasks for implementing an intervention are developed in advance, and the quality of those schemes or methods	"planning" AND "implementation"
Effective adaptation	Modifying an intervention to better fit the circumstances of the implementation site—in response to cultural, demographic, geographic, or other factors	"adaptation process" OR "adaptation planning" OR "adapting programs" OR "adapting interventions" OR "modifying programs" OR "modifying interventions" OR "tailoring programs" OR "modifying interventions"
Formally appointed internal implementation leaders	Individuals from within the organization who have been formally appointed with responsibility for implementing an intervention as coordinator, project manager, team leader, or other similar role	"implementation leaders" OR "implementation team" OR "program leaders" OR "program team"
Champions	Individuals who dedicate themselves to supporting, marketing, and "driving through" an implementation, including overcoming indifference or resistance that the intervention may cause in an organization	"champions"
Contextual fit	The match between the strategies, procedures, time lines, or elements of an intervention and the culture, needs, skills, and resources available in a setting against the competing demands and initiatives that could prevent successful implementation	"contextual fit" OR "compatibility"
Implementation Fidelity	Selection of appropriate practitioners and staff to deliver the EBP and be part of the implementation team, opportunities for effective training (in terms of content and methods), and ongoing coaching and supports	("technical assistance" AND "training and support" AND "ongoing support") OR "coaching" OR "mentoring"

Implementation science construct	Definition of the construct	Final search terms used
Organization drivers	Alignment of funding, policy, and regulatory environments with service delivery, expectations, and requirements of the program and administration's efforts to address barriers to implementation	"organization drivers" OR "organizational supports" OR "organizational structures" OR "organizational policies" OR "organizational supports" OR "organizational structures" OR "organizational policies"
Leadership drivers	Use of technical leadership approaches (e.g., quick to recognize and respond to issues that arise) in places with substantial agreement about what needs to be done and adaptive leadership approaches (e.g., using a collaborative learning approach) in places with less consensus	"leadership drivers" OR "leadership responsiveness" OR "leadership responsiveness" OR "leadership support"
Intervention fidelity	Monitoring of implementation to ensure, among other things, that core components and adaptations of the intervention are being implemented as intended	"fidelity of implementation" OR "program fidelity" OR "intervention fidelity" OR "fidelity data" OR "monitoring implementation" OR "monitoring program" OR "process data" OR "process evaluation" OR "fidelity of process"
Targeted outcomes	Assessment of whether changes in intended results are being observed.	"fidelity of outcomes" OR "fidelity monitoring" OR "implementation monitoring"
Supportive feedback mechanisms	Engagement in feedback loops in which implementation and outcome data are routinely collected and used to make modifications to program delivery, content, capacity, and infrastructure of the host	"supportive feedback mechanisms" OR "continuous quality improvement" OR "continuous feedback loops"
Sustainability planning	Degree to which key stakeholders plan for various aspects of program institutionalization that ensure aspects of the program will become institutionalized	"sustainability planning" OR "long term planning"

Inclusion Criteria

We used the following inclusion criteria:

- Published between 2005 and 2015 (plus seminal works identified by experts)²
- Included at least one implementation science construct in the title, keywords, or abstract of the article
- Published in English
- Must be synthesis articles, such as meta-analyses, systematic reviews, research syntheses, and literature reviews

We chose to focus on literature published between 2005 and 2015 because of the breadth of information covered in this review, the resources available to conduct this review, and the relative newness of the field of implementation science. One of the 31 implementation science constructs had to be mentioned in the title, key words, or abstract of the article to be included; this increased the probability that the construct was a focus of the article. We chose to focus on articles published in English because we lacked the time necessary to have articles translated. After talking to AIR experts in systematic reviews and conducting some preliminary searches that produced more than 5,000 references, we chose to include only synthesis articles and not articles describing results of individual interventions. However, we included additional references recommended by our experts because of the lag time between what is currently known in the field and knowledge captured in systematic reviews, as well as the fact that systematic reviews sometimes do not capture nuances in the role of implementation factors.

Search Engines Used

We conducted preliminary searches using several search engines and determined that conducting parallel research using two search engines (EBSCO and PubMed) produced the greatest number of relevant results.

Sample Search Strings

We used sets of search strings to identify relevant references for each implementation science construct. For the majority of constructs, several rounds of search strings were piloted before we determined the final set of search terms that produced the most relevant set of references to review. For example, for the construct *access to knowledge and information*, we used three sets of search terms before settling on the fourth set as the final search terms (see Appendix C, Table 2). While we planned to use search strings that specified the intervention and outcomes of interest (and in some cases, the population of interest—e.g., runaway youth) after conducting preliminary searches for all constructs, results produced very few hits with this criterion specified.

² Seminal work was identified by AIR implementation science experts (e.g., Stephen Garfinkel, Avinash Singh), experts in the field (e.g., Karen Blase, Gregory Aarons), and manual searches of scholar.google.

Coding Process

A brief coding instrument was developed by the AIR research team, piloted with a subset of studies, revised on the basis of this initial testing, and then finalized (see Appendix A for a copy of the final coding guide). Because of the parameters of the environmental scan (e.g., it had to be completed in a relatively short time frame and within a relatively limited budget, had to cover multiple disciplines and fields of research, and had to produce a set of constructs that resonated with federal staff working in health and human service settings across several agencies), the coding instrument was used to identify the key features of the articles that were most relevant in our environmental scan.

The AIR research team developed a coding process and a coding guidance document. The three principal coders, all of whom had experience in conducting systematic reviews, reviewed the coding instrument and randomly selected several articles for trial coding. The team tested the coding instrument with these articles, then discussed how to reconcile coding disagreements and enhance the overall coding system. The two lead coders then repeated this coding calibration exercise with another random set of studies. Since the two lead coders had very little disagreement on the way they coded these articles, the remaining studies were randomly allocated among the three members of the team and coded individually. The first author carried out a spot check to assess inter-rater reliability for 10% of the 240 potentially relevant articles. The few disagreements between the first author and the team members' coding were discussed until the group came to a consensus about the final coding. After coding was completed, the team revisited the evidence gathered for each construct and eliminated references that all three team members agreed were weak or irrelevant to the target construct.

Results of the Environmental Scan

As Figure 1 shows, our final search terms for the 31 implementation science constructs produced 1,886 references (595 references in EBSCO and 1,260 references in PubMed, 37 references from a manual search of the seminal literature and literature suggested by AIR experts and experts in the field). After applying our inclusion criteria, 1,662 articles were excluded and 224 full-text articles were retrieved. This process involved finding the full-text articles on a variety of databases and contacting multiple libraries to request articles that were not available. In reviewing the abstracts and text of the 224 articles, we determined that 99 of the articles retrieved did not meet our inclusion criteria. Out of the 99 articles, 77 were excluded after reading the full text of the article (these were coded as irrelevant). Twenty-two articles were excluded after coding the article, on the grounds that the evidence for these articles was substandard (when compared with other references). Upon careful review, the team found that the coded evidence for these articles was insufficient, typically because the reference was too brief or speculative. Thus, the environmental scan produced 125 relevant articles to code. It is important to note that, although all articles were identified for a specific construct, many articles mentioned the importance of multiple constructs; on average, each source was coded for approximately two constructs. Therefore, there is not a one-to-one correspondence between the number of articles obtained for coding and the total number of construct references. For example, there were 2 articles obtained for the construct of *relative advantage* (see Appendix C, Table 3), but once we completed the coding, we found 5 articles that mentioned *relative advantage* (see Table 2).

Process Used to Identify the Most Studied and Reported Constructs

In identifying the list of implementation science constructs that could be relevant for successful implementation of evidence-based interventions, we chose to identify a list of the most studied and reported constructs because we had the most information from our environmental scan about how and why these constructs influenced program implementation and outcomes. There were several steps to identifying the most studied constructs on the basis of the results of the environmental scan. First, we developed a table to present the full list of constructs and the number of articles that were identified as potential sources for each construct (see Appendix C, Table 3). Any construct that was cited in fewer than five articles was eliminated from being one of the “most studied” constructs because of its limited coverage in the literature. Five constructs were eliminated on the basis of this criterion (constructs coded red in Table 2).

Second, we reviewed the nature of the references for the remaining constructs to determine to what extent the references indicated a positive, negative, mixed, nonsignificant, neutral, or not reported relationship between each construct and program implementation and/or outcomes (see Table 2). Figure 2 presents our framework for the way constructs are related to program implementation and program outcomes. The relationship between each construct and program implementation/success could be characterized as positive, negative, nonsignificant, neutral,³ or mixed evidence based on the qualitative or quantitative findings presented in the article. Criteria for making this determination is presented in Appendix A. If there was a positive relationship, then higher levels or higher quality of the construct predicted more successful/higher levels of program implementation or improvements in outcomes, which was the case in 28 of the 31 constructs. If there was a negative relationship, then higher levels of the construct predicted unsuccessful/lower levels of program implementation or limited improvements in outcomes, which was the case in the construct of *complexity/feasibility*. If there was a neutral relationship, then effects were coded for each individual study after reading the evidence in the article; this was the case for two constructs - *cost* and *organizational structural characteristics*. For constructs we did not deem neutral, we applied directional codes (positive/negative) as appropriate. For example, nine articles mentioned the importance of *effective adaptation*, which was defined as “modifying an intervention to better fit the circumstances of the implementation site in response to cultural, demographic, geographic, or other factors.” Six of these articles indicated that there was a positive relationship so that “tailoring the scale-up approach to the settings within which they operate[d], such as community characteristics, financial and human resources, and local sociopolitical landscape was . . . widely identified as an important success factor” (Milat, Bauman, & Redman, 2015, p. 9). However, the other three articles did not report the relationship between *effective adaptation* and program implementation and/or outcomes because the articles reviewed did not provide enough information.

After applying our coding system to each construct, we ruled out constructs with fewer than five articles that reported the relationship between the construct and program implementation and outcomes (because the relationship could not be determined on the basis of the information

³ Relationships were coded as “neutral” if the construct was not dichotomous; for example, it is possible to have more or less *complexity/feasibility*, but not more or fewer structural characteristics.

provided). Seven constructs were eliminated on the basis of this criterion (constructs coded orange in Table 2). To further refine the list, we reviewed all the evidence for each of the 19 remaining constructs (i.e., we reviewed the quotes from the reviewed articles that supported each construct's importance and, if necessary, the original article for further reading). At this juncture, constructs that were supported by less, or less consistent, evidence were eliminated (constructs coded yellow in Table 2). Several articles reporting the influence of these four constructs reported mixed or nonsignificant findings. For example, for *external policies and incentives*, articles described “effects for pay for performance policies on drug use and health outcomes as uncertain” or “insufficient evidence to support or not support the use of financial incentives to improve the quality of primary health care” (Rashidian, Omidvari, Vali, Sturm, & Oxman, 2015; p. 4; Scott et al., p. 15). Finally, based on the information supporting each remaining construct we identified 15 constructs with the strongest evidence of a consistently positive relation to program implementation and outcomes (constructs coded green in Table 2). Examples from the studies we reviewed illustrated the way each construct related to program implementation or outcomes.

Table 2. Relationship of Each Implementation Factor to Successful Implementation and Positive Outcomes

Implementation factor	No. references	Positive	Mixed, Neutral, Negative, or Nonsignificant	Not reported
Organizational incentives and rewards	4	3	0	1
Planning	3	2	0	1
Relative priority	3	3	0	0
Sustainability planning	4	3	0	1
Trialability	3	3	0	0
Adaptability	5	1	0	4
Formally appointed internal implementation leaders	3	1	0	2
Leadership drivers	7	2	0	5
Organization drivers	7	1	0	6
Presence of core components	9	4	0	5
Relative advantage	5	2	0	3
Targeted outcomes	7	3	0	4
Access to knowledge and information	10	4	3	3
Complexity/feasibility	9	2	6	1
Cost	8	0	7	1
External policy and incentives	19	8	10	1
Addressing client needs	11	5	1	5
Available resources	21	19	0	2
Champions	18	11	1	6
Implementation Fidelity	33	25	2	6
Contextual fit	10	6	0	4
Effective adaptation	9	6	0	3
Evidence strength and quality	6	5	0	1
Intervention fidelity	17	8	3	6
Organizational communications	14	14	0	0
Organizational culture	16	11	0	5
Organizational readiness	12	9	0	3
Organizational structural characteristics	12	0	8	4
Skills, competencies, and expertise	18	12	2	4
Role of leadership	13	11	0	2
Supportive feedback mechanisms	12	8	2	2

Notes. The color-coding for each construct indicates whether, and at what stage, the construct failed to meet one of our criteria for the “most-studied” constructs. Red constructs were eliminated because the constructs were cited in less than five articles. Orange constructs were eliminated because the relationship between the construct and implementation success was reported in less than five articles. Yellow constructs were eliminated because they were supported by less evidence, or less consistent evidence, than other constructs among our list of final candidates. Green constructs are the set of constructs deemed “most studied and researched.” For the mixed, neutral, nonsignificant, or nonsignificant column, in most cases, there was evidence of mixed or nonsignificant findings. There was only one case where we found articles that posited a negative relationship between a construct and implementation outcomes. Four articles found a negative relationship between *complexity/feasibility* and program implementation and outcomes. This was the hypothesized direction of the effect for *complexity/feasibility* so this was not surprising. There were only two cases where we found evidence of neutral findings, for the constructs of *cost* (n=8) and *organizational structural characteristics* (n=8).

Constructs That Are Insufficiently Studied and Reported

Twelve constructs were eliminated because of the limited number of identified articles (< 5) from the reviewed literature that described that construct or because of the limited number of articles (< 5) that reported the relationship between that construct and program implementation/outcomes (see Table 2 – these constructs are highlighted in red and orange, respectively.) This did not allow us to fully understand the nature, consistency, or strength of the relationship between these constructs and program implementation and program outcomes. These were:

- relative advantage,
- adaptability
- trialability,
- presence of core components,
- relative priority,
- organizational incentives and rewards,
- planning,
- formally appointed internal implementation leaders,
- organization drivers,
- leadership drivers,
- targeted outcomes, and
- sustainability planning.

The fact that insufficient information is available does not mean that these constructs should be considered unimportant. For example, at least three reviewed articles mentioned the importance of the *presence of core components*, *trialability*, *relative priority*, *organizational incentives and rewards*, *targeted outcomes*, and *sustainability planning*. One reviewed article described how *trialability*—or testing out a program first—plays a role in scaling-up efforts: “Several interviewees suggested that scale-up is more likely through synchronous implementation and research, which Peters and colleagues (2009) call ‘learning and doing.’” The article went on to say, “Using data and experimenting underlies a lot of successful scale-up approaches. Mapping constraints, having the flexibility to redesign, learn-do cycling, being able to call in a more complete set of stakeholders—these kinds of approaches are more likely to lead to success” (Yamey, 2011, p. 2). Another article described how *relative priority* influences adoption and implementation: “First of all, organizational users need to find out how simple the solution is and judge this new technology’s potential benefits. Thus Relative Advantage and Simplicity are closely related to software-as-a-service adoption” (Yang, 2015, p. 257). A third article explained the importance of *targeted outcomes* to improve intervention fidelity saying, “When measurement and feedback are integrated in the intensive care unit, staff see the correlation between increased compliance and decreased ventilator-associated pneumonia rates . . . reinforcing adherence to new care processes” (Goutier et al., 2014, p. 1003). While these constructs may be important, we identified too few articles to act upon at this time.

Preliminary List of the Most Studied and Reported Constructs Identified by Our Environmental Scan

Below, we present brief descriptions of each of the 15 most studied and reported constructs we identified. It is important to acknowledge the overlap between several of these constructs. For example, there is overlap between *adaptability* and *effective adaptation*; and several constructs with *organizational readiness* including *relative advantage* and *relative priority*. Nevertheless, we have conceptualized each of these factors separately to be consistent with evidence and frameworks from implementation science research. The constructs are presented in alphabetical order.

Addressing Client Needs

Addressing client needs refers to the extent to which an organization accurately knows, prioritizes, and meets clients' stated and implicit needs, as well as barriers and facilitators to meeting these needs. Findings were generally consistent regarding the relationship between *addressing client needs* and program implementation. Specifically, where information provided in the reviewed articles was sufficient for reporting results, a positive relationship was reported in five articles and a nonsignificant relationship was found in one article. Most articles mentioned the importance of services addressing "the concerns and issues that are paramount to the child and family" being served and developing more "responsive," versus "reactive," service systems to address client needs (Glisson, 2002, p. 244). Articles mentioned understanding client needs as being important at different points in program implementation; this could be addressed when first identifying what services an individual should receive, while monitoring the way that a person is responding to services, and when developing a transition plan. In addition, several articles identified ignorance of the patient's needs or lack of understanding of variation in need based on demographic characteristics (e.g., race, socioeconomic status) as barriers to developing and providing effective services. Several articles mentioned identifying stated and implicit client needs by conducting a needs assessment and finding evidence that this needs assessment was related to successful program implementation. The relation of *addressing client needs* to program outcomes was not described in any of the articles.

Available Resources

Available resources refers to the level of resources dedicated to implementation and ongoing operations, including funding, training, education, physical space, time, and budget development. This construct was one of 8 with the most consistent positive findings. Specifically, a positive relationship between *available resources* and program implementation was reported in all 19 articles in which enough information was provided in the reviewed articles to report results. Articles mentioned *available resources* as a critical factor in multiple stages of implementation: "Participants were unanimous in noting that resources were a significant factor at every stage of health services research and research-based innovation" (Moore, Fischer, & Havranek, 2015, p. 5). The reviewed articles frequently described a lack of resources as a barrier to successful implementation and sustainability versus an abundance of resources as a facilitating factor.

The majority of reviewed articles described the following types of resources as critical: time (e.g., ensuring that staff had enough time to learn and implement a new practice); human resources (e.g., ensuring that there were adequate staff with the necessary skills and knowledge); facilities, infrastructure, information, and materials (e.g., availability of data tools, evaluation, and information management systems, office space); and financial resources (e.g., money to send people to training, purchase materials, and pay for people to cover staff while they are attending trainings). In exploring the importance of resources when implementing evidence-based programs, authors of one article (Austin & Claassen, 2008, pp. 277-278) proposed that organizations ask themselves the following three questions:

Does the organization have the financial and human resources needed to implement evidence-based practices (EBPs)?

Does the organization have resources to support staff devoting a significant amount of time to acquiring, assessing, and applying the research to practice?

Does the organization have the financial means to support the required trainings or other inputs needed?

These questions suggest that resources play an important role in allowing an organization to purchase the program and associated materials, to allocate time for staff to learn the practice, and to support staff in attending the required trainings or other related events. Another study (Mendel et al., 2008, p. 7) described the importance of resource mobilization and “the need to effectively marshal resources in order to spread and sustain wide-scale systemic change.” This same study described two additional types of resources not mentioned frequently in the literature: social and political capital,⁴ within organizational settings or from the wider environment, as essential.

Champions

Champions refers to individuals who dedicate themselves to supporting, marketing, and “driving through” an implementation, including overcoming indifference or resistance that the intervention may cause in an organization. Findings were generally consistent about the relationship of this construct to program implementation and outcomes. Specifically, when information provided in the reviewed articles was sufficient for reporting results, a positive relationship was found in 11 articles and a nonsignificant relationship was found in 1 article. Several articles described the very important role of the champion as “the person behind the daily program operations who motivates and facilitates communication among all those involved in the implementation” (Savignac & Dunbar, 2014, p. 11). Fostering motivation and enthusiasm, maintaining project momentum, and increasing buy-in, investment, and ownership were discussed as key aspects of this job. One study described champions as “crucial enablers because they are the individuals within the organization who seek out creative ideas and make them tangible through coalition building, knowledge sharing, and persuasion” (Yen, Wang, Wei, Hsu, & Chiu, 2012, p. 816). The authors observed: “In fact, innovation of all kinds requires

⁴ Social capital is defined as “networks together with shared norms, values and understandings that facilitate co-operation within or among groups” (Organization for Economic Co-operation and Development. n.d., p. 103). Political capital refers to the trust, goodwill, and influence of a political figure on the public and other politicians (Schugurensky, 2000).

champions who provide energy and momentum to the implementation process by supporting and promoting the innovation. Rather than directly influencing the success of innovation, a champion may influence other people and processes during innovation” (Yen et al., p. 816).

The director or coordinator of the program was considered the champion in most reviewed articles; however, a few studies identified more midline people to serve in this role. In analyses of community-based efforts, authors discussed the role of “local leaders” or persons of influence who helped bring credibility to a program being implemented. Authors of a few reviewed articles cautioned that “the person designated to play this role must have enough authority within the organization to be able to influence decisions and make changes to organizational structures and policies, but also . . . have relationships with the staff in charge of administering the program” (Savignac & Dunbar, 2014, p. 11). Reviewed articles also discussed implementation challenges that arose when program champions did not have enough time to perform these critical tasks. Several reviewed articles provided evidence demonstrating the way the presence of champions influenced implementation and outcomes (e.g., “In the American study of high- and low-performing anticoagulation clinics, it was found that the highest-performing clinics had at least one champion who was focused on quality improvement” [Innis, Dryden-Palmer, Perreira, & Berta, 2015, p. 268] and “A sentinel trial showed opinion leaders significantly accelerated uptake of guideline recommendations in the care of patients with acute myocardial infarction. A subsequent review of 12 reviewed articles showed that opinion leaders decreased the level of noncompliance with guideline recommendations on average by 10%” [Scott, 2009, pp. 390-392]).

Contextual Fit

Contextual fit refers to the match between the strategies, procedures, time lines, or elements of an intervention and the culture, needs, skills, and resources available in a setting against the competing demands and initiatives that could prevent successful implementation. Findings were consistent about the relationship between *contextual fit* and program implementation.

Specifically, when information provided in the reviewed articles was sufficient for reporting results, a positive relationship with program implementation was reported in six articles. This construct was described as relatively important (more important than *relative advantage* and *complexity*, in one study) but not a critical factor in all the reviewed articles.⁵ One article defined *contextual fit* as “the fit between the organization’s core technology and the social context” (Glisson, 2002, p. 240), and other authors described this construct as “consistency with community values” (Nöstlinger et al., 2015, p. 4) or “the degree of compatibility [among] community context, cultural characteristics of local populations, organizational infrastructure, and direct service support in mental health settings” (Hernandez, Nesman, Mowery, Acevedo-Polakovich, & Callejas, 2009, p. 1047).

⁵ There was one exception: The authors of one study said, “The most frequently discussed characteristic of successful integration was programme compatibility, mentioned in 15 of the 27 papers. . . . Across all studies, programme managers and researchers commented on the critical importance of compatibility between programmes prior to integration to fully capture the potential advantages of integration” (Wallace, Dietz, & Cairns, 2009, p.17).

Most articles described compatibility characteristics such as similarities in target population, logistical needs, worker training, stakeholder support, costs, and supply chain requirements, and discussed how culture, structure, climate and work attitudes of the social context “must complement and support the work that [was] required to implement the core [program] in the most effective way possible” (Glisson, 2002, p. 240). There was somewhat limited evidence for the relation of *contextual fit* to program outcomes. One exception was an article where the authors said “Findings from this research . . . also indicate that achieving goodness of fit between a firm’s environments and the characteristics of an enterprise resource planning system has a great impact on its performance” (Hwang, 2011, p. 213).

Effective Adaptation

Effective adaptation refers to the process of modifying an intervention to better fit the circumstances of the implementation site in response to cultural, demographic, geographic, or other contextual factors. Findings were consistent about *effective adaptation*’s relationship to program implementation. Specifically, when information provided in the reviewed articles was sufficient for reporting results, seven articles described a positive relationship between *effective adaptation* and implementation success. Two articles described failing to adapt interventions to the local context as a major stumbling block in implementation and scale-up processes (Milat et al., 2015; Nöstlinger et al., 2015). For example, one article described research teams being unable to implement and scale up a prescribed program because they first “had to adapt the interventions to fit typical organisations with limited resources” (Milat et al., p. 9). Multiple reviews stressed that there is no “one-size-fits-all” evidence-based practice, noting that “protocols must be adapted to each specific hospital environment . . . [because] no single protocol would be effective in all practice settings” (Nazer, Chow, & Moghissi, 2007, p. 143).

Different reasons for adaptation were described; sources suggested that interventions should be sensitive to the characteristics of the setting, the target population’s cultural and socioeconomic status, and the available resources in the community. One article advocated for tailoring the scale-up approach to the “community characteristics, financial and human resources, and local socio-political landscape” (Milat et al., 2015, p. 9). Another cautioned that “interventions developed specifically for young [HIV patients] in resource-rich settings . . . cannot be simply transferred without adequate cultural adaptation” (Nöstlinger et al., 2015, p. 2). Some sources called for adaptation at the level of the individual, personalizing interventions for every patient. This strategy was deemed successful by the authors of one meta-analysis, who concluded, “Personalization of diet and exercise regimens increases patient participation and improves outcomes” (Ward, White, & Druss, 2015, p. 481). Besides the evidence provided in this study, few reviewed articles provided data to indicate how the adaptation process impacted program outcomes.

Evidence Strength and Quality

Evidence strength and quality refers to the availability, type, quality, and validity of information supporting the probability that the intervention will have desired outcomes. Findings were consistent about the relationship between strength of evidence and program implementation. Specifically, where the information provided in the reviewed articles was sufficient for reporting results, a positive, albeit weak, relationship with program implementation and/or outcomes was

reported in five articles. Most articles described the way this type of information promoted implementers' support for or adoption of a program. One article described the need to consider "a combination of the research, clinical experience, and patient preferences . . . [when] assessing the nature and strength of the evidence and its potential for implementation, when articulating how stakeholders should look beyond the published academic research, and when weighing the evidence for a program" (Kitson, Harvey, & McCormack, 1998, p. 150). Another article mentioned having limited evidence as a barrier to implementation, citing Thurston and King (2004, p. 239), who reported that "the lack of published evidence related to their search questions limited the opportunities for participants to fully critique and rate the evidence using the EBP protocols."

This construct was described as a statistically significant, but not strong, factor influencing program implementation in the five articles. For example, one article observed, "Results suggest that better compliance was associated with . . . better quality of evidence supporting the recommendations [and] compatibility of the recommendation with existing values . . . However, these characteristics accounted for less than 20% of the variation in performance" (Grol & Grimshaw, 2003, p. 1226). Owczarzak and Dickson-Gomez (2011, p. 112) said:

Agencies participated in training for the [program] because other programs [had] no research to back them up, but this program is "scientifically proven to work to reduce the spread of disease." These factors encouraged professionals to attend the training, although due to the qualitative nature of this study, there [was] no quantitative data on how many people were influenced by this factor.

Implementation Fidelity

Implementation fidelity refers to the importance of selecting the right people to deliver a program and providing effective training, ongoing coaching, and supports over the course of implementation. This was another construct with consistent positive findings. Specifically, there was a positive relationship between *implementation fidelity* and program implementation and outcomes in 25 studies and a mixed relationship in two studies (6 articles could not report on the relationship because of insufficient information about the original studies). Most articles mentioned the critical importance of providing professional development opportunities, such as continuing education and certification programs, on-site training, and ongoing supports. In some of the articles, specific types of training and technical assistance were reviewed and discussed. These included having clinicians keep patient diaries that were then reviewed and discussed with supervisors, forming communities of practice in which colleagues within or across organizations could engage in collaborative learning, and using existing leaders in the organization or external consultants as coaches and mentors. For example, one article reviewing EBPs for staff treating people with severe mental illness suggested educating providers about relevant knowledge and skill by having "training technologies that [could] be provided at the job site and that [were] quickly transferable to the practice environment through the use of modeling, role play, feedback, homework, and ongoing, regular consultation to help staff learn new skills and apply them in their treatment settings" (Corrigan, Steiner, McCracken, Blaser, & Barr, 2001, p. 1601).

A few reviewed articles mentioned the importance of training addressing the implementer's motivation, expectations, and sense of self-efficacy because of the relationship between these

attitudes and support for and/or future performance of a new program. Several reviewed articles mentioned limited training in (1) assessment of client needs; (2) the model being implemented and associated skills required to deliver it successfully; and (3) the way to read research, use technology, and interpret data as barriers to implementing programs and practices. Only one study mentioned the importance of selecting the right people to implement the program. Multiple reviewed articles mentioned the strong empirical support connecting implementation fidelity and implementers' behaviors and skills (e.g., increased use of the skills learned at their practice settings), as well as program outcomes.

Intervention Fidelity

Intervention fidelity was defined as ensuring that, among other things, the core components and adapted elements of the intervention were being implemented as intended. This construct was discussed in several of the reviewed articles as being of great importance for program implementation and outcomes. Eight of the 11 studies that reported a relationship between *intervention fidelity* and implementation success described a positive correlation. There was also mixed evidence for this construct's importance in 2 studies and a nonsignificant relationship reported in 1 study. Generally, programs that were delivered at a high level of program fidelity had significant effects, while programs that were delivered at a low level of program fidelity had smaller or nonsignificant effects. For example one reviewed article said, "In sum, the results of 483 studies included in five meta-analyses that look broadly at implementation combined with the results of 59 additional studies with more specific findings clearly indicate that . . . achieving good implementation not only increases the chances of program success in statistical terms, but also can lead to much stronger benefits for participants" (Durlak & DuPre, 2008, p. 334).

Articles mentioned the importance of collecting complete and consistent data on *intervention fidelity* to evaluate adherence to the program model, to identify midcourse corrections to improve implementation, and to inform scale-up efforts. One article specifically mentioned the importance of "defining how the adoption is to be measured, the method for collecting the data, the timeframe for monitoring, and who is responsible for monitoring," as well as "mak[ing] choices about the most critical aspects to be tracked" (Kresse et al., 2007, p. 155). One study with mixed findings found other explanatory variables that accounted for the relationship between *intervention fidelity* and reduced hospitalization rates, such as the presence of multidisciplinary teams, regular meeting, and home visiting. This suggests the relation of *intervention fidelity* to other organizational aspects of the service that could also improve program outcomes.

Organizational Communications

Organizational communications refers to the nature or quality of webs or social networks, and the nature and quality of formal and informal exchanges within an organization. This was one of 8 constructs with the most consistent positive findings. A positive relationship between *organizational communications* and program implementation was reported in all 14 articles in which information provided in the reviewed articles was sufficient for reporting results. Most reviewed articles described communication as being "an essential mechanism" (Rusly, Corner, & Sun, 2012, p. 339) and "one of the most indicative activities in an organization" (Gonzales, 2014, p. 120). One study asserted that "the role of an open communication climate has been declared to

be the most important element for successful school improvement ambitions” (Gonzales, 2014, p. 121). Articles frequently discussed the nature and quality of formal and informal communication channels within an organization. For example, Rusly et al. (2012, p. 343-344), reviewing the change readiness and knowledge management research, described communication as

play[ing] a significant role in knowledge sharing. For instance, communication channels, openness of communication and effective dialogue during formal meetings and social interactions are claimed to positively influence employees’ willingness to share and disseminate knowledge. This is apparent since communication structure could shape interactions among employees, thus providing a crucial platform for sharing to occur.

Particularly in the articles reviewing literature in health settings, there was an emphasis on effective communication among multiple parties, including the nurse-physician teams and doctors in different disciplines. Although the role of networks in supporting evidence-based practice was not discussed as frequently, articles also described that role: “Internal social networks are the formal and informal routes that members of the organization may use to exchange information and communicate about new practices. A facilitator to adopting evidence-based practice is active encouragement, on the part of the organization, of its members to form networks” (Innis et al., 2015, p. 267). There was more limited evidence that *organizational communications* directly influenced program outcomes than there was for some of the other constructs. For example, authors reviewing effective strategies for improving the quality and safety of health care reported that the current evidence for the importance of interdisciplinary collaboration and teamwork was limited to “descriptive studies suggesting change in knowledge, skills, attitudes and beliefs, although effect on quality of care and patient outcomes is yet to be assessed” (Scott, 2009, p. 393). A few reviewed articles found evidence for increased adoption rates in health care organizations in settings with networks in place and open communication channels. Many articles mentioning this construct also described interorganizational communications and networks, and sometimes did not tease apart the importance of inter- versus intra-organizational communications.

Organizational Culture

Organizational culture refers to the norms, values, traditions, and basic assumptions of a given organization. This was one of 8 constructs with the most consistent positive findings. A positive relationship for program implementation and/or outcomes was reported in all 11 articles in which information provided in the reviewed articles was sufficient for reporting results. Articles described this construct as “a key factor facilitating evidence based program adoption” (Melnik, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012, p. 411), “one of the most frequently reported facilitating factors” (Innis et al., 2015, p. 257), and “a key factor in the dissemination, implementation, and ongoing success of children's mental health treatments” (Hemmelgarn, Glisson, & James, 2006, p. 74).

Several articles described the way the *organizational culture* might support implementation of new programs or evidence-based practices if “the current situation [was] not tolerable, leading to tension supportive of change, and organizational openness to risk-taking” (Flaspohler, Duffy, Wandersman, Stillman, & Maras, 2008, p. 191). Other articles described the way *organizational culture* was related to the change process and, specifically, the limited uptake of programs that

conflicted with an organization's cultural values. Conversely, the implementation of new practices might be facilitated if practices were aligned with the mission and values of the organization and its strategic direction.

Articles described conducive environments as those with “open communication and exchange of ideas,” (p. 17) a “multidisciplinary environment of mutual respect (p. 19),” “a culture of putting the patient first and egos second (p. 19)” (Brown, Wickline, Ecoff, & Glaser, 2009), and “teamwork collaboration, accountability, family-centeredness, respect, and integrity” (Kramer, Schmalenberg, & Maguire, 2010, p. 12). In contrast, other authors described characteristics of certain work environments that explained why mental health and social service systems developed resistant and rigid cultures that were hesitant to adopt practices that could potentially improve the quality and outcomes of services. Those cultures required “excessive documentation, overly restrictive supervisory approval, and rigid conformity to procedural specifications such as . . . litigation” (Glisson, 2008, p. 559).

Suggesting the importance of *organizational culture*, one article described the way the “decisions of child welfare workers [were] often dictated more by organizational norms than by the actual needs of clients” (Hemmelgarn, et al., 2006, p. 74). However, articles described *organizational culture* as being “ingrained” (Doherty, 2006, p. 37) and difficult to change quickly. There was sufficient research evidence in the articles about the relation of this construct to program outcomes (e.g., “children served by a child welfare and juvenile justice systems with more positive climates are more likely to experience improved psycho-social functioning, obtain more comprehensive services, and experience more continuity in the services they receive” (Hemmelgarn et al., p. 74). According to Glisson (2007, p. 739), a “number of studies in various types of organizations link culture and climate to service quality, service outcomes, worker morale, staff turnover, the adoption of innovations, and organizational effectiveness.”

Organizational Readiness

Organizational readiness is referred to as the extent to which staff members within an organization are both willing and able to implement particular practices. *Organizational readiness* was one of 8 constructs with the most consistent positive findings. Specifically, a positive relationship for program implementation and/or outcomes was reported in all 9 articles in which information provided in the reviewed articles was sufficient for reporting results. This construct was mentioned frequently when discussing the importance of conducting needs assessments with organizations early on in the implementation process to understand “needs and assets” of the human service or health care setting. A meta-analysis examining 10 organizational characteristics related to information technology innovation adoption (e.g., organizational size, top management support, presence of a product champion, and prior knowledge and expertise of individuals within the organization) found *organizational readiness* to be the strongest predictor of adoption.

Several articles highlighted the multidimensional elements of *organizational readiness* that included psychological and structural elements present at both the individual and organizational level. For example, one article described the way this construct “encompasses an individual's willingness to change, that can be influenced by the beliefs of his co-workers, as well as collective attitudes or intentions of the organization's members and the organization's ability to

carry out those changes” (Rusly et al., 2012, p. 331). AIR’s earlier work with ASPE on implementing evidence-based programs described the importance of three characteristics of readiness: organizational capacity, innovation-specific capacity, and motivation (Dymnicki, Wandersman, Osher, Grigorescu, & Huang, 2014). Two reviewed articles mentioned these characteristics and described efforts to develop the first capacity, such as “training on how to develop logic models and program evaluation plans,” and efforts to increase the second capacity, such as “training on how to select and implement science based sex and HIV prevention programs” (Rolleri, Wilson, Paluzzi, & Sedivy, 2008, p. 227). A few articles identified more specific activities associated with *organizational readiness*, such as cultivating the leadership team’s support for the initiative, aligning the initiative with the strategic plans, measurement, and reward systems of the health care setting, and developing personnel training and involvement in the initiative’s principles and methods.

Organizational Structural Characteristics

Organizational structural characteristics include aspects such as the social architecture,⁶ age, maturity, and size of an organization. It was more challenging to summarize the evidence for this construct because of the varied ways in which structural characteristics were related to program implementation and sustainability.⁷ Authors of the reviewed articles most frequently assessed size as an *organizational structural characteristic*. For example, one source described how evidence-based practices were selected in small, midsize, or large nursing homes. They reported that decisions in larger nursing homes were made by a manager and communicated to staff, whereas decisions in midsize or smaller nursing homes were made in a less autocratic way. Another source noted that the size of an organization’s information technology department was a stronger predictor of innovation adoption than was the size of the overall organization.

More traditional perspectives in the literature (Weber, 1922, 1947; Parsons, 1951; Homans, 1958) describe *organizational structure* as “the pattern of relations among positions in the organization” and “the set of roles that people occupy in each position.” For example, one study described differentiation in personnel (staff members having clearly defined and separate roles versus all staff serving similar functions in an organization) as being associated with increased program adoption (Mendel et al., 2008), and another study indicated that health care settings that admitted all diagnostic groups (versus people presenting a specific problem) made adoption of innovations more difficult (Kitson et al., 1998).

A few reviewed articles discussed other structural elements of organizations, such as the context of the primary care setting (i.e., whether it was a stand-alone clinic or it was positioned within a larger health care system), decentralized decision making, and organizational maturity (i.e., how long the organization had been operating), but studies did not frequently report on how these elements were related to program implementation or outcomes. It is important to note that a study pointed out that these characteristics appeared “to interact in complex ways, and also

⁶ Social architecture is the conscious design of an environment that encourages a range of social behaviors leading toward a goal or set of goals (Twemlow, Fonagy, & Sacco, 2004)

⁷ The influence of two constructs (cost, structural characteristics) could not be coded as positive, negative, mixed, or nonsignificant because there was not a consistent relationship between the way these constructs related to program implementation and outcomes.

interact with the characteristics of the innovation to be implemented (such as its fit with organizational goals)” (Wandersman et al., 2008, p. 177).

Role of Leadership

Role of Leadership refers to the commitment, involvement, and accountability of leaders and managers involved in implementation. This was one of 8 constructs with the most consistent positive findings. Specifically, a positive relationship for program implementation and/or outcomes was reported in all 11 articles in which information provided in the reviewed articles was sufficient for reporting results. Authors of the reviewed articles described this construct “as especially significant for successful implementation,” “a catalyst for the model’s implementation,” (Léveillé & Chamberland, 2010, p. 936) and a “very important element” (Savignac & Dunbar; 2014, p. 17).

Leaders were described as playing multiple instrumental roles in new initiatives, including “creating readiness for change” and “supporting the change process” (Nyström, 2009, p. 288), and ensuring “uptake and implementation of change” (Innis et al., 2015, p. 268). The articles described the way that, when leaders were engaged in and committed to new programs or initiatives, the culture and climate of the organization would be aligned with the needs of practitioners and thus help to create favorable conditions in which to deliver the program. Several reviewed articles also stated that implementation would not have been possible without the support of the leadership; these articles mentioned specific roles for leadership in “establishing reasonable goals for [the initiative], exhibiting strong commitment to the successful introduction of [the initiative], and developing and communicating the . . . strategy to all clinical staff” (Rahimi, Vimarlunc, & Timpka, 2009, p. 7).

Leadership also ensured the credibility of the program; for example, having visible endorsement of the national government in one study was associated with program success and uptake. It is interesting to note that leadership was mentioned as important at the organizational, local, regional, and national levels. Several articles mentioned the relationship between leadership engagement and program adoption, and a few linked engagement to program outcomes. For example, “Researchers observed improvements in surgical care when leadership was visible and close to the front line of patient care... perceived lack of administrative leadership was associated with less engagement in patient safety and infection control activities” (Kuo & Robb, 2013, p. 1797).

Skills, Competencies, and Expertise

This construct refers to practitioners’ technical skills, social and emotional skills (e.g., cultural competence), and acquired expertise with related evidence-based interventions. Findings were mostly consistent about this construct’s relationship to program implementation and outcomes. Specifically, when information provided in the reviewed articles was sufficient for reporting results, a positive relationship was cited in 12 articles, a mixed relationship was found in 1 article, and a nonsignificant relationship was found in 1 article. Perceptions of the strength of this relationship varied widely: Some authors simply labeled skills as an “influencing factor”

(Schildkamp & Poortman, 2015, p. 8) and lack of skills as a major barrier to implementation; authors in other articles said that the relationship was a “weakly significant” determinant of success (Hameed, Counsell, & Swift, 2012, p. 14). The majority of the articles focused on technical skills. The few articles that addressed nontechnical skills focused on skills that enabled communication and collaboration; for example, surgeons operating in disaster response efforts fared better when they possessed “interpersonal skills such as communication, teamwork . . . flexibility, adaptability . . . physical and psychological self-care, conflict management, collaboration, [and] professionalism” (Willems, Waxman, Bacon, Smith, & Kitto, 2013, p. 384).⁸ Important technical skills included practitioners having specialized knowledge to effectively implement evidence-based practices. For example, one review found that effective behavioral health providers drew on “two specific knowledge bases.... information about the impact of serious psychiatric disabilities—for example, psychiatric symptoms, social dysfunction, course of the disorders, and impact on family—and information about pharmacological and psychosocial interventions” (Corrigan et al., 2001, p. 1599).

The value of specialized knowledge was also acknowledged in other fields, such as education (as related to implementing school data teams to improve student achievement) and business (to promote the uptake of business innovations). A few sources took a more holistic view of practitioner skills and expertise, addressing the role of education in driving successful implementation and outcomes: “A recent study . . . indicates that a higher percentage of university-trained nurses in the workforce results in a statistically significant reduction in hospital mortality” (Rose & Nelson, 2006, p. 82). Most reviewed articles described the skills and competencies of practitioners as related to program success and scale-up (e.g., one article linked patient outcomes to therapists’ familiarity with the cognitive-behavioral therapy model).

Supportive Feedback Mechanisms

Supportive feedback mechanisms involve organizations routinely engaging in feedback loops where implementation and outcome data are collected and used to make modifications to program delivery, content, capacity, and internal infrastructure. Findings were not consistent regarding the relationship between *supportive feedback mechanisms* and program implementation and outcomes, however this construct still seemed to be described as an important factor. Specifically, when information provided in the reviewed articles was sufficient for reporting results, a positive relationship was found in 8 articles and a mixed relationship was found in 2 articles. One complication in discerning the relationship between feedback and implementation success is that feedback mechanisms are often bundled with other components of a quality improvement cycle. It was difficult to isolate the effect of *supportive feedback mechanisms* as a stand-alone construct. There were some cross-cutting themes that emerged from the evidence for *supportive feedback mechanisms*, such as the importance of feedback timing, attention to concepts including real-time feedback, continuous/ongoing feedback, and timely feedback. Multiple sources focused on the audit and feedback approach, which has been adopted in a number of clinical settings and typically entails giving service providers a summary of their performance over time. Articles, however, found mixed evidence for the effectiveness of audit and feedback, depending on the type of intervention being promoted and other conditions:

⁸ This is distinguished from the construct of organizational communication because of its focus not only on communication skills but on skills such as flexibility and adaptability.

“[Audit and feedback] seemed to be effective when targeting test ordering and prevention, but the effect size could be moderated by type of feedback, its source and format, and frequency or intensity of presentation” (Grol & Grimshaw, 2003, p. 1227). Several articles emphasized the importance of collecting and analyzing objective, quantitative data, which can then inform meaningful feedback and promote implementation success. One article referenced the role of feedback in promoting adoption of new practices—that is, once poor performance or poor outcomes have been documented, practitioners are more likely to change their behavior (Glisson, 2008, p. 571).

Measures for the Most-Studied and Reported Constructs

Part of our intention for the next phase of work is to identify if there are appropriate measures in the field for the most-studied constructs. With this in mind, we searched several websites including Society for Implementation Research Collaboration (SIRC) Instrument Repository, the Grid-Enabled Measures Database (GEM), and the Consolidated Framework for Implementation Research (CFIR). Table 4 summarizes this information. Only 3 measures are suggested on the CFIR website - the Organizational readiness to Change Assessment (ORCA), the Organizational Change Manager (OCM), and the Implementation Leadership Scale. The SIRC instrument repository provided most of the information presented in Table 4. However, SIRC’s review of measures stopped by 2012 and information about several constructs on the SIRC website is currently unavailable.⁹ For constructs with no available information, we consulted Dr. Cara Lewis (Primary Investigator for SIRC) and her colleagues for recommended measures. These are presented in Table 4 as well.

⁹ The constructs that have been finalized and are working correctly are *acceptability*, *adoption*, *appropriateness*, *cost*, *feasibility*, *fidelity*, *penetration*, and *sustainability*. Of these, only *appropriateness* and *fidelity* are included in our list of most studied and researched constructs (as represented by the constructs of *contextual fit* and *intervention fidelity*, respectively).

Conclusion

We designed and conducted an environmental scan to identify a list of implementation science constructs to potentially use for selecting, supporting, and monitoring grantees (e.g., in funding opportunity announcements and when providing training and technical assistance for federally funded initiatives). A set of 31 implementation science constructs was developed in collaboration with ASPE on the basis of the existing literature; relevant federal efforts; and the practicality/usability, malleability, relevance, and measurability of each construct. We then performed an environmental scan using multiple sets of search terms to conduct searches for each implementation science construct. This scan yielded more than 1,800 references of potentially relevant articles. After applying our inclusion criteria, 224 full-text articles were retrieved, and after reviewing the abstracts and text of these 224 articles, we identified 125 articles to code. Results of coding these articles indicated that 12 of the constructs were infrequently mentioned in the literature—that is, a substantive relationship between this construct and program implementation and outcomes was reported in fewer than 5 reviewed articles. Evidence for the remaining 19 constructs was reviewed closely to understand how consistently the coded articles identified the construct’s influence, the nature of the relationship between the construct and program outcomes and implementation, and the strength of that relationship. These criteria were used to identify a list of 15 implementation science constructs, which we provided further explanation and justification for. We also provided some preliminary measures of these 15 constructs based on our review of several instrument repositories (SIRC, GEM, and CFIR).

With the involvement of ASPE, key informants, and the federal technical working group members, we plan to further refine this list, to make this effort as valuable as possible to multiple stakeholders, including staff at federal agencies. Specifically, over the next several months, we will conduct informant interviews with several people at federal agencies who implement federally funded programs and with several others doing this work in academic settings in order to provide input and feedback into the relevance and importance of these 15 constructs. In addition, we will engage the federal technical working group members in conversations about the relevance and importance of the constructs for their own work. These activities will lead to further refinement of the definitions of each construct and the final list of constructs that are identified.

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Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses Flow Chart for Current Environmental Scan

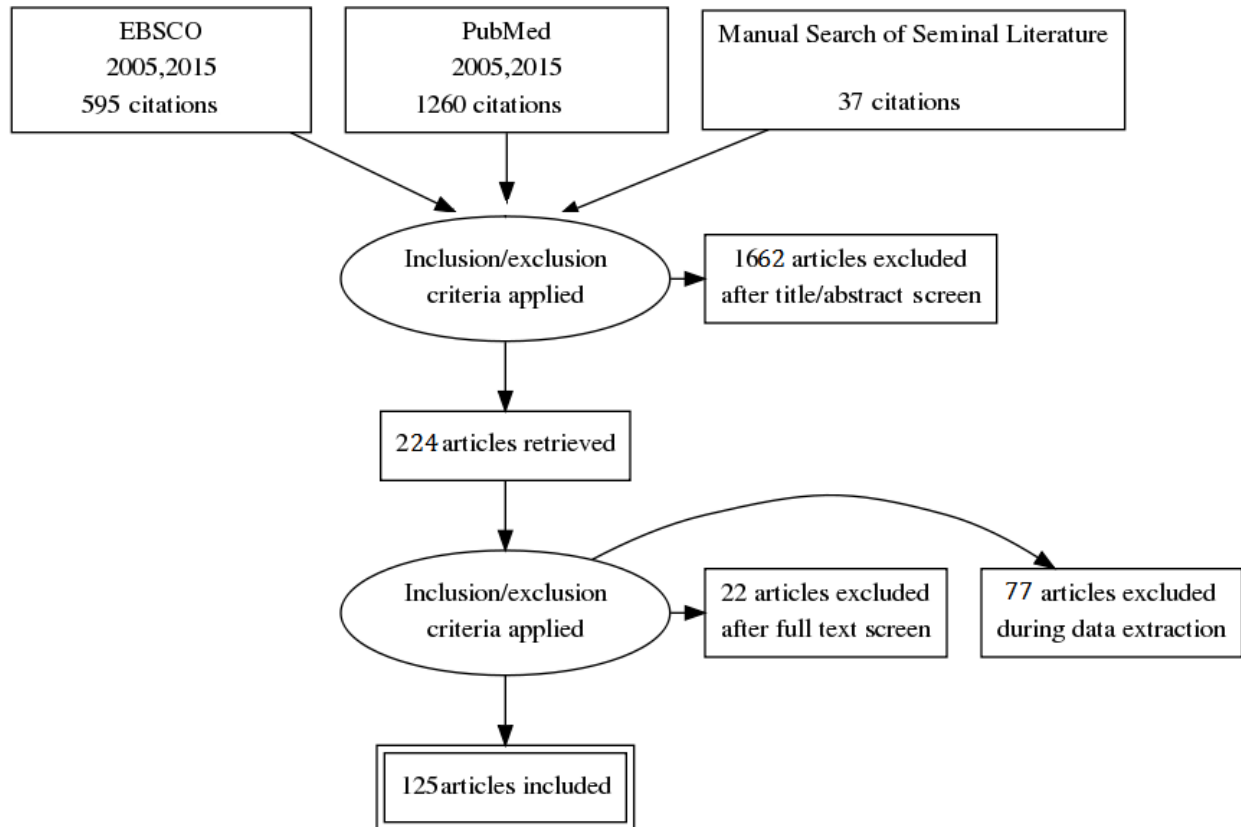
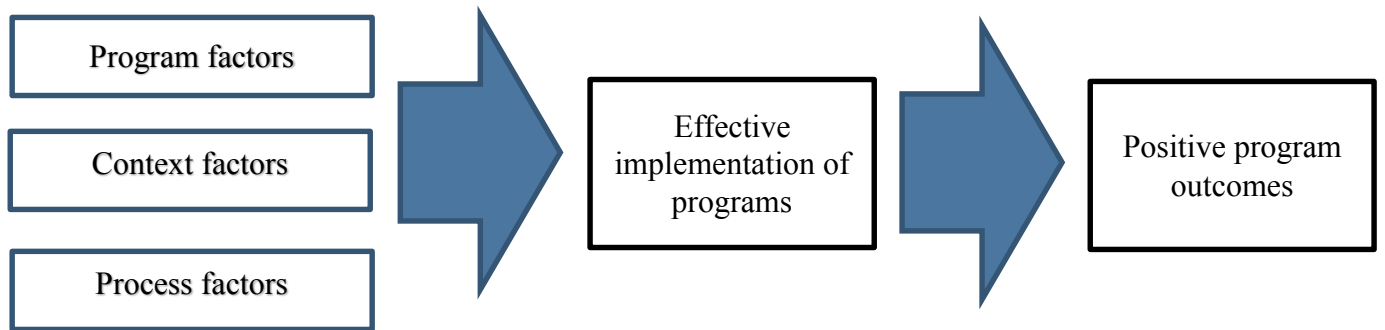


Figure 2. Framework for the Way Constructs Influence Program Implementation and Outcomes



Appendix A. Coding Guide

Background information	
Title and author(s):	
Relevance of the study after review	<input type="checkbox"/> Relevant after review <input type="checkbox"/> Not relevant after review Please describe: _____
Type of study	<input type="checkbox"/> Meta-analysis <input type="checkbox"/> Conceptual review <input type="checkbox"/> Other (specify) _____
Ecological validity	Select all that apply <input type="checkbox"/> Includes urban settings <input type="checkbox"/> Includes frontier/rural settings <input type="checkbox"/> Includes both urban and frontier/rural settings <input type="checkbox"/> Setting not reported <input type="checkbox"/> Includes high resource settings <input type="checkbox"/> Includes low resource settings <input type="checkbox"/> Includes both high and low resource settings <input type="checkbox"/> Resources not reported <input type="checkbox"/> Takes place in the US <input type="checkbox"/> Does not take place in the US <input type="checkbox"/> Takes place in both the US and internationally <input type="checkbox"/> Locale not reported <input type="checkbox"/> Includes people identifying as Caucasian <input type="checkbox"/> Includes people identifying as minorities <input type="checkbox"/> Includes people identifying as multiple races <input type="checkbox"/> Race not reported
Content area	<input type="checkbox"/> Health <input type="checkbox"/> Drugs and/or alcohol <input type="checkbox"/> Early childhood and parenting <input type="checkbox"/> Teen pregnancy/sexually transmitted diseases <input type="checkbox"/> Child welfare /Housing/homelessness

	<input type="checkbox"/> Youth violence
	<input type="checkbox"/> Other (<i>specify</i>):
Implementation science constructs	
Name of constructs (check all)	
Factors related to the program	
<input type="checkbox"/> Evidence strength & quality	
<input type="checkbox"/> Relative advantage	
<input type="checkbox"/> Adaptability	
<input type="checkbox"/> Trialability	
<input type="checkbox"/> Complexity/feasibility	
<input type="checkbox"/> Presence of core components	
<input type="checkbox"/> Cost	
Factors related to the context	
<input type="checkbox"/> Skills, competencies, and expertise	
<input type="checkbox"/> Technical skills <input type="checkbox"/> nontechnical (social-emotional skills)	
<input type="checkbox"/> Addressing client needs	
<input type="checkbox"/> External policy & incentives	
<input type="checkbox"/> Organizational structural characteristics	
<input type="checkbox"/> Organizational communications	
<input type="checkbox"/> Organizational culture	
<input type="checkbox"/> Relative priority	
<input type="checkbox"/> Organizational incentives and rewards	
Readiness for implementation	
<input type="checkbox"/> Organizational readiness	
<input type="checkbox"/> Role of leadership	
<input type="checkbox"/> Available resources	
<input type="checkbox"/> Access to knowledge and information	
Factors related to the implementation process	
<input type="checkbox"/> Planning	
<input type="checkbox"/> Adaptation	
Engaging	
<input type="checkbox"/> Formally appointed internal implementation leaders	
<input type="checkbox"/> Champions	
<input type="checkbox"/> Selecting appropriate programs	
<input type="checkbox"/> Contextual fit	
Executing	
<input type="checkbox"/> Implementation fidelity	

<input type="checkbox"/> Organization drivers	
<input type="checkbox"/> Leadership drivers	
<input type="checkbox"/> Intervention fidelity	
<input type="checkbox"/> Targeted outcomes	
<input type="checkbox"/> Supportive feedback mechanisms	
<input type="checkbox"/> Sustainability planning	
Methods and results	
#, proportion of outcomes affected and type of effect, by construct (see information on next page to use as guidance)	Construct name: Proportion of outcomes affected (e.g., 0/1): <input type="checkbox"/> Not reported Type of effect: <input type="checkbox"/> Not reported Empirical evidence to support this <input type="checkbox"/> Yes <input type="checkbox"/> No
	Construct name: Proportion of outcomes affected (e.g., 0/1): <input type="checkbox"/> Not reported Type of effect: <input type="checkbox"/> Not reported Empirical evidence to support this <input type="checkbox"/> Yes <input type="checkbox"/> No
	Construct name: Proportion of outcomes affected (e.g., 0/1): <input type="checkbox"/> Not reported Type of effect: <input type="checkbox"/> Not reported Empirical evidence to support this <input type="checkbox"/> Yes <input type="checkbox"/> No
	Construct name: Proportion of outcomes affected (e.g., 0/1): <input type="checkbox"/> Not reported Type of effect: <input type="checkbox"/> Not reported Empirical evidence to support this <input type="checkbox"/> Yes <input type="checkbox"/> No
	Construct name: Proportion of outcomes affected (e.g., 0/1): <input type="checkbox"/> Not reported Type of effect: <input type="checkbox"/> Not reported Empirical evidence to support this <input type="checkbox"/> Yes <input type="checkbox"/> No
Notes	

Criteria for Determining the Type of Effect:

Based on whether there were qualitative or quantitative data findings, we used the following criteria to determine the type of effect. If results from qualitative data was being reported (this was the case for the majority of the studies), we coded effects as positive when there were statements such as “Interviewees suggested that the most salient factors” or “Political leadership was described as a important factor in implementing....” Effects were coded as mixed if a systematic review included statements such as “Evidence from 6 of the 13 studies indicated support for this factor” or “There was mixed support for the importance of this factor.” Effects were coded as nonsignificant if authors described “Limited evidence” or “No support” for a specific construct.

If results from quantitative data were being reported (this happened rarely), we coded effects based on guidance from the What Works Clearinghouse (see Table below). Specifically, we looked at the empirical data that was presented about the relationship of the construct to the implementation or program outcomes and the author’s determination of the effect being statistically significant and positive, statistically significant and negative, or not statistically significant. For example, a finding was coded as statistically significant positive when the study reported “In a large survey of clinicians and case managers (n=303) working in 49 mental healthcare organizations in California, it was found that there was a significant relationship between positive rankings of organizational leadership and positive attitudes towards evidence-based practice” and a table with data confirmed this statement. A finding was coded as “nonsignificant” when authors reported the effect as nonsignificant, no difference between program and control groups, or insufficient evidence of effectiveness. (There are no examples of effects from quantitative data being coded as negative or mixed).

Table. [What Works Clearinghouse Characterization of Findings of an Effect Based on a Single-Outcome Measure](#)

Statistically significant positive effect	The estimated effect is positive and statistically significant (correcting for clustering when not properly aligned).
Non-significant or Indeterminate effect	The estimated effect is neither statistically significant nor substantively important.
Statistically significant negative effect	The estimated effect is negative and statistically significant (correcting for clustering when not properly aligned).

Note. A statistically significant estimate of an effect is one for which the probability of observing such a result by chance is less than 1 in 20 (using a two-tailed t-test with $p = 0.05$). A properly aligned analysis is one for which the unit of assignment and unit of analysis are the same.

Appendix B. Relevant Efforts, Initiatives, and Organizations Focused on Successful Implementation and/or Scale-Up of EBIs

- Issue briefs released by the Office of the Assistant Secretary for Planning and Evaluation
- The Society for Implementation Research Collaboration (SIRC)
- The National Cancer Institute's (NCI) Grid-Enabled Measures (GEM)
- The National Implementation Researchers Network (NIRN)
- The National Prevention Science Coalition (NPSC)
- The Institute of Medicine's (IOM) Forum on Promoting Children's Cognitive, Affective, and Behavioral Health
- The Pew McArthur Results First Initiative
- The Consolidated Framework for Implementation Research
- The Getting to Outcomes Improving Community-Based Prevention Initiative
- http://www.rand.org/content/dam/rand/pubs/technical_reports/2004/RAND_TR101.pdf
- The Community Tool Box - <http://ctb.ku.edu/en>

Appendix C. Tables Summarizing Environmental Scan Process and Results

Table 1. Intervention Program Areas and Related Outcomes

Additional population criteria	Interventions program areas	Related outcomes
None specified	Health care, physical/mental /minority/women's health	Improved health/mental health/maternal health/physical health outcomes, such as reduced depression/anxiety, rates of psychiatric diagnoses/illnesses
None specified	Food/drug safety, food/drug regulations, vaccinations, obesity, nutrition	Reduction in food related illness, reduction in drug related illness, reduction in obesity, increased levels of vaccination, exercise, or nutritious eating
None specified	Wellness/promotion/prevention	Increased well-being, improved health outcomes such as reduced depression/anxiety, lower rates of psychiatric diagnoses/illnesses
None specified	Sexually transmitted/infectious disease	Reduction in risky sexual practices, increased use of contraception or infectious disease prevention practices
None specified	Toxic substance, substance/drug abuse	Declines in initiation of substance/drug use, declines in ongoing substance/drug abuse
None specified	Early childhood education, home visiting, maternal health, fatherhood	Improved maternal/paternal health, enhanced school readiness, increased quality of childcare settings
Runaway/homeless, youth in state custody, victims of child abuse/neglect	Child welfare, foster care, adoption, housing	Successful placement, stable/enduring home placement, minimal out of home placement, achieving and maintaining permanency
Victims of child abuse/neglect	Domestic/dating/teen dating/youth violence, intentional injury, bullying, aggression	Reduced violence prevention, reduced bullying/aggression, reduced domestic/dating/teen dating violence

Table 2. Search Terms and Search Results

Search terms	Hits in EBSCO	Hits in PubMed
1. "access to program knowledge" OR "access to intervention knowledge" OR "access to program information" OR "access to intervention information" OR "access to information about the program" OR "access to information about the intervention" OR "access to knowledge about the program" OR "access to knowledge about the intervention"	0	139
2. "program information" OR "intervention information"	3	4
3. ("organizational knowledge" OR "codified knowledge" OR "public knowledge") AND ("implementation" OR "intervention")	6	0
4. "program information" OR "intervention information"/("organizational knowledge" OR "codified knowledge" OR "public knowledge") AND ("implementation" OR "intervention")	13	8

Table 3. Results of the Search Process, by Implementation Construct

Implementation factor	No. articles identified ¹⁰	Used intervention /outcome limits	No. hits in EBSCO	No. hits in PubMed	No. seminal pieces
Evidence strength & quality	6	yes	15	36	4
Relative advantage	2	yes	9	52	
Adaptability	8	no	66	27	
Trialability	4	no	2	35	
Complexity/feasibility	7	yes	37	73	2
Presence of core components	6	no	22	18	
Cost	6	no	3	45	
Skills, competencies, and expertise	8	no	12	9	4
Addressing client needs	17	no	13	43	
External policy and incentives	14	no	10	59	
Organizational structural characteristics	5	no	57	19	1
Organizational communications	4	no	40	339	
Organizational culture	7	no	1	25	6
Relative priority	0	no	5	67	
Organizational incentives and rewards	4	no	20	20	2
Organizational readiness	13	no	12	18	
Role of leadership	4	no	11	6	1
Available resources	13	no	29	39	2
Access to knowledge and information	3	no	13	8	1
Planning	8	PubMed only	19	20	
Effective adaptation	2	no	6	13	
Formally appointed internal implementation leaders	1	no	6	2	
Champions	10	no	28	23	
Contextual fit	10	no	39	50	
Implementation Fidelity	10	yes	12	14	
Organization drivers	10	no	34	61	1
Leadership drivers	1		4	7	
Intervention fidelity	9	no	47	60	1
Targeted outcomes	18	no	4	56	
Supportive feedback mechanisms	9	no	6	13	
Sustainability planning	5	no	13	3	

¹⁰ Please note that there is not a one-to-one correspondence between the number of articles identified in Appendix C. Table 3 and the number of references identified in Table 2 in the text as described on page 9.

Table 4: Measures for Most Important Constructs Based on Review of SIRC Instrument Repository, GEM, and CFIR Websites

Constructs	Our definition	Availability of measures	Other Items
1. Addressing client needs	The extent to which an organization accurately knows, prioritizes, and addresses client/consumer needs, as well as barriers and facilitators to meeting those needs	None on GEMS 7 recommended by SIRC team members	SIRC team members recommended 7 measures (none are available on SIRC website). Below, we provide a few examples of measures (specific items are not available because we do not have access to full versions of most measures). Survey of program training needs: Staff version Perceptions of Problems and Needs for Services Perceived Need for Care Questionnaire
2. Available resources	The level of resources dedicated to implementation and ongoing operations, including money, training, education, physical space, time, and budget development	None on GEMS 3 on SIRC	There are 3 measures available on SIRC website and 1 relevant measure was found from our related searches. ¹¹ Financial Resource Availability: In this organization [plant], money has been readily available to support activities related to the implementation of [insert name of program] (need to get full measure to get more items) Survey of Program Training Needs How strongly do you agree or disagree with each of the following statements? Facilities & Climate: Office, equipment, and supplies are adequate at your program. Your program has enough counselors and staff to meet current client needs.

¹¹We did not include [Financial Resource Availability \(General\) \(FRA – Gen\)](#), which is a 5-item scale that assesses respondents' perceptions of the availability of slack financial resources for an organization, because this does not seem as relevant.

Constructs	Our definition	Availability of measures	Other Items
3. Champions	Individuals who dedicate themselves to supporting, marketing, and “driving through” an implementation, including overcoming indifference or resistance that the intervention may cause in an organization	None on GEMS 1 recommended by SIRC team members	Your program has adequate resources for meeting most medical and psychiatric client needs. Alberta Context Tool Estabrooks et al. (2009) Staff: Enough staff to deliver quality care Space: Use of designated space Time: Time to do something extra for patients SIRC team members recommended 1 measure (none are available on SIRC website). Below, we provide the measure and sample items. Champion Behavior Scale Shows personal commitment to the innovation Secures the top level support required Stands behind the innovation and supports it Gives ongoing support to the program team
4. Implementation fidelity	Selection of appropriate practitioners and staff to deliver the EBP and providing opportunities for effective training, ongoing coaching, and supports	No relevant constructs on GEMS 39 recommended by SIRC team members	SIRC team members recommended 6 measures (none are available on SIRC website). Note, these measures have not gone through the SIRC systematic review process yet. Below, we provide a few examples of measures. Most of these measures describe adherence to a particular type of therapy. Family Psychoeducation Fidelity Scale MBT Adherence and Competence Scale Measurement Instrument Program Integrity EOUIP
5. Contextual fit	The match between the strategies, procedures, time lines, or elements of an intervention and the culture, needs, skills, and resources available in a setting against the competing demands	Compatibility: None on GEMS 1 on SIRC Appropriateness: 7 measures on SIRC	There are many measures available on the SIRC website to assess contextual fit. Below, we provide a few examples of measures and specific items.

Constructs	Our definition	Availability of measures	Other Items
	and initiatives that could prevent successful implementation		<p><u>Adoption of Information Technology Innovation-Compatibility Subscale</u> Using a [insert name of program] is compatible with all aspects of my work Using a [insert name of program] is completely compatible with my current situation I think that using a [insert name of program] fits well with the way I like to work. Using a [insert name of program] fits into my work style.</p> <p><u>Training/Practice Acceptability/Feasibility/Appropriateness Scale</u> How compatible are the information and practices with your agency / service setting's mission or service provision mandate? How relevant are the information and practices to your client population? How well do the information and practices fit with your current treatment modality, theoretical orientation, or skill set?</p> <p><u>Influences on Psychotherapy Training Participation Scale (PPTPS)</u> The practices/training can be integrated with the therapy you already provide. The practices/training are endorsed by therapists you respect. Colleagues at my organization already use the practices and are available to provide on-site supervision, consultation, or support.</p> <p><u>Information Technology Appropriateness Survey</u> Current internal systems are easily adaptable to [Electronic Data Interchange] Current state of computerization of your business is conducive to [Electronic Data Interchange] implementation</p>

Constructs	Our definition	Availability of measures	Other Items
6. Effective adaptation	Modifying an intervention to better fit the circumstances of the implementation site—in response to cultural, demographic, geographic, or other factors	None on GEMS ¹² 1 recommended by SIRC team members	Trading partner coordination and support is available Internal organizational situation is amenable SIRC team members recommended 1 measure (none are available on SIRC website). Below, we provide the measure and a brief description. The Reinvention Measurement Instrument Measured fidelity to the individual activities. For each activity, the following were assessed: whether the activity was (a) conducted as written in the curriculum, (b) conducted as written in the curriculum but in a different order, (c) not conducted at all, or (d) conducted with changes. If an activity was changed, the interviewer asked the participants to describe the changes. Descriptions of new activities were collected. The participants were also asked, from a list of prepared reasons, to attribute all reasons for modifications (deletions, additions, and changes to the activities) that were made. The list of reasons was developed by means of a literature review and input from an expert panel about common reasons for reinvention, for example, to simplify, to expand to another risk behavior, to increase ownership/make more suitable for new target audience, to meet needs of the organization requiring the change, to update or modernize, and to adapt to time constraints (Kelly et al., 2000; E. M. Rogers, 1995). If other was chosen, the participant was asked to further explain the reason for the change. Test–retest reliability for the RMI was conducted with eight of the participants. All core element variables had kappa scores of .7 or above.

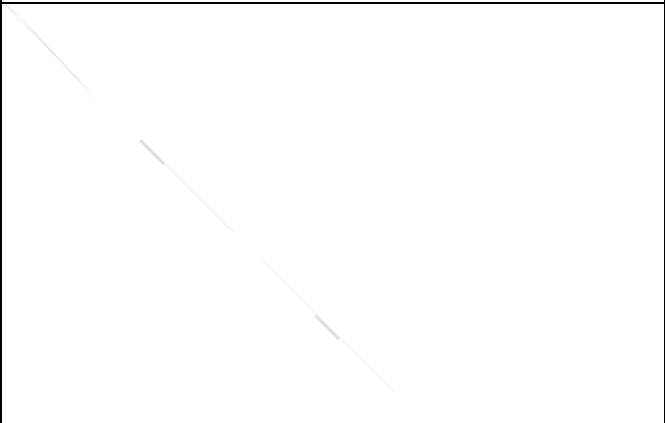
¹²The GEMS website made the suggestion to include qualitative data elicited through interviews and also rated on a 5-point scale for strength of presence and valence (positive or negative) of influence on implementation or work processes.

Constructs	Our definition	Availability of measures	Other Items
7. Evidence strength and quality	The availability, type, quality, and validity of information supporting the probability that the intervention will have desired outcomes	None on GEMS 6 recommended by SIRC team members	SIRC team members recommended 6 measures (none are available on SIRC website). Below, we provide a few examples of measures (specific items are not available because we do not have access to full versions of most measures). Grading of Recommendation, Assessment, Development, & Evaluation Influences on Practitioner Treatment Selection Treatment Credibility Scale
8. Intervention fidelity	Monitoring of implementation to ensure, among other things, that core components and adaptations of the intervention are being implemented as intended	1 on GEMS 0 on SIRC	There is only 1 measure available on GEMS. Below, we provide the measure and sample items. Tool for Measurement of Assertive Community Treatment Items related to intensity of service (The team provides high amount of face-to-face service time as needed ¹³), frequency of contact (The team delivers high number of face-to-face service contacts as needed. ¹⁴) and role of different people on the implementation team (ROLE OF SUBSTANCE ABUSE SPECIALIST IN TREATMENT: The substance abuse specialist provides integrated dual disorders treatment to ACT consumers who have a substance use problem.)
9. Organizational communications	The nature and quality of webs or social networks, and the nature and quality of formal and informal exchanges within an organization	3 measures listed on GEMS ¹⁵ 12 measures listed for networks & communications on SIRC	There are many measures available on the GEMS and SIRC website. Below, we provide a few examples of measures and specific items.

¹³ Ratings are 1=average of less than 15 minutes/week of face-to face contact, 2=15-49 minutes/week, 3=50-84 minutes per week, 85-119 minutes per week, 5=average of 2 hours or more per week

¹⁴ Ratings are 1=average of less than .5 face-to face contacts/week per consumer, 2=6 – 1.3 per week, 3=1.4-2.1 per week, 4=2.2-2.9 per week, 5=average of 3 more per week

¹⁵ 1st measure listed for organizational and group communication, 2nd measure listed for effective communication and 3rd measure listed for communication

Constructs	Our definition	Availability of measures	Other Items
			<p><u>Group Development Questionnaire</u> The group gets, gives, and uses feedback about its effectiveness and productivity. Members tend to go along with whatever the leader suggests. We haven't discussed our goals very much.</p> <p><u>Social Interaction Scale</u> Employees typically do not talk or interact with others while doing their work. The typical supervisor to whom employees report meets with individual employees to discuss their work goals. To do their work, employees typically talk on the telephone.</p> <p><u>Duckers Organizational Measure</u> There is good communication and coordination At collaborative meetings I always gain valuable insights The division of tasks is perfectly clear</p>
10. Organizational culture	Norms, values, traditions, and basic assumptions of a given organization	None on GEMS SIRC: Considerable number	<p>There are many measures available on the SIRC website. Below, we provide a few examples of measures and specific items.</p> <p><u>Clinical Practices Guidelines Implementation Instrument</u> How do you perceive the present circumstances in your clinical practice in terms of the context of care, forms of evaluation and the function of facilitator? The context is characterized by traditional (command and control) leadership versus transformational leadership The context is receptive to change The context is characterized by a culture that promotes a learning organization Multiple methods are used for clinical, performance, economic, and experience evaluations</p>

Constructs	Our definition	Availability of measures	Other Items
			<p>The context is characterized by a culture that is clear about prevailing values and beliefs</p> <p>The function and role of facilitator aims at enabling others (for example teach searching for literature)</p> <p>There is feedback on individual, team, and system performance</p> <p>Presence of facilitators and appropriate facilitation methods</p> <p><u>Organizational Attributes Survey</u></p> <p>When decisions are being made, the people affected are asked for their ideas.</p> <p>Our ability to function creatively is respected by the leadership.</p> <p>The leadership will usually come up with some financial support if we need it to try out a new idea.</p> <p>Rather than worrying about setting priorities, we deal with each problem as it comes up.</p> <p><u>Organizational Change Questionnaire-Climate of Change, Process, and Readiness</u></p> <p>Those who implement change have no say in developing the proposals.</p> <p>Decisions concerning work are taken in consultation with the staff who are affected.</p> <p>Within our organization, power games between the departments play an important role.</p>
11. Organizational readiness	The extent to which staff members within an organization are both willing and able to implement particular practices, including motivation, general capacity, and innovation-specific capacity	4 from GEMS 14 from SIRCS	<p>There are many measures available on the SIRCS website. Below, we provide a few examples of measures and specific items.</p> <p><u>Assessing Your Readiness Worksheet</u></p> <p>The extent to which we've engaged partners, individuals, or organizations to assist us in planning and implementing the intervention is... [Good/Fair/Poor]</p>

Constructs	Our definition	Availability of measures	Other Items
			<p>The level of support we have from those who will be affected by the intervention is... [Good/Fair/Poor]</p> <p>The amount of funding we have for planning and implementing the intervention is... [Good/Fair/Poor]</p> <p><u>Change Process Capability Questionnaire (CPCQ)</u></p> <p>Our resources (personnel, time, financial) are too tightly limited to improve [patient care].</p> <p>Our clinic has well-developed administrative structures and processes in place to create change.</p> <p>Our clinic has a well-defined quality improvement process for designing and introducing changes in the quality of care.</p> <p><u>Dimensions of Organizational Readiness-Revised (DOOR-R)</u></p> <p>Our senior leaders have encouraged all of us to embrace this change.</p> <p>This change will improve our organizations' overall efficiency.</p> <p>There are some tasks that will be required when we changed that I don't think I can do well.</p>
12. Organizational structural characteristics	The social architecture, age, maturity, and size of an organization—including physical environment	None on GEMS 2 on SIRC	<p>There are 2 measures available on SIRC website. Below, we provide these measures and sample items for one.</p> <p><u>Survey of Structure & Operations</u></p> <p>Does your program operate under a parent organization?</p> <p>How many "siblings" do you have (how many other substance abuse treatment programs under this parent organization?)</p> <p>What proportion of your program's financial books are independent of your parent organization?</p> <p>Are you able to determine the percentage of your budget that is covered by your parent organization versus your program?</p>

Constructs	Our definition	Availability of measures	Other Items
			<p>Your program Your parent organization</p> <p>Service Provider Survey-this instrument was not suitable for SIRC systematic review process</p>
13. Role of leadership	Commitment, involvement, and accountability of leaders and managers involved in implementation	<p>1 on CFIR website None on GEMS 5 on SIRC</p>	<p>There is 1 measure available on the CFIR website and 5 measures available on the SIRC website. Below, we provide a few examples of measures and specific items.</p> <p>Implementation Leadership Scale:</p> <p>Proactive leadership</p> <ol style="list-style-type: none"> 1. Established clear standards for implementation of EBP 2. Developed a plan to facilitate EBP implementation 3. Removed obstacles to implementation of EBP <p>Knowledgeable leadership</p> <ol style="list-style-type: none"> 4. Knows what he/she is talking about when it comes to EBP 5. Is knowledgeable about EBP 6. Is able to answer staff questions about EBP <p>Supportive leadership</p> <ol style="list-style-type: none"> 7. Supports employee efforts to use EBP 8. Supports employee efforts to learn more about EBP 9. Recognizes and appreciates employee efforts <p>Perseverant leadership</p> <ol style="list-style-type: none"> 10. Perseveres through the ups and downs of implementing 11. Carries on through the challenges of implementing EBP 12. Reacts to critical issues regarding implementation of EBP <p>Survey of Transformational Leadership – Program Staff Version</p> <p>The person I am rating...</p>

Constructs	Our definition	Availability of measures	Other Items
			<ul style="list-style-type: none"> identifies limitations that may hinder organizational improvement. expresses confidence in staff members' collective ability to reach program goals. prepares for challenges that may result from changes in the program. helps staff members see how their own goals can be reached by pursuing program goals. <p><u>Supervisory Working Alliance Inventory – Trainee Version</u></p> <p>My supervisor encourages me to formulate my own interventions with the client. My supervisor encourages me to take time to understand what the client is saying and doing. My supervisor helps me work within a specific treatment plan with my clients.</p>
14. Skills, competencies, and expertise	The technical, social, and emotional skills (e.g., cultural competence) and expertise with related evidence-based programs of practitioners implementing the EBPs	4 measures found on GEMS for provider attitudes and behavior and 4 for self-regulation (none for self-management). No relevant constructs on SIRC.	<p>There are 4 measures available on GEMS.</p> <p><u>Shared Decision-Making Self-Assessment Questionnaire: Pre-Training</u></p> <p>I am able to introduce a preference sensitive decision in a consultation I am comfortable with introducing decision support tools (within or outside the consultation) I am able to elicit the patient's personal preferences</p> <p><u>Shared Decision-Making Self-Assessment Questionnaire: Post-Training</u></p> <p>I am able to explain why there is more than one treatment option I am able to portray the options and check for understanding I understand the structure of a shared decision making consultation</p>

Constructs	Our definition	Availability of measures	Other Items
			<p><u>Survey of Physician Attitudes Regarding the Care of Cancer Survivors</u></p> <p>How confident do you feel about your knowledge of the following aspects of cancer-related follow-up care for...</p> <ul style="list-style-type: none"> • The potential adverse psychosocial outcomes of cancer or its treatment • Long-term and late physical adverse effects of cancer and cancer treatment • Appropriate surveillance testing to detect recurrent cancer <p>Have you received training or instruction regarding the late or long-term effects of cancer treatment that cancer survivors may experience over time?</p> <p><u>Survey of Physician Attitudes Regarding the Care of Cancer Survivors - Oncology</u></p> <p>Thinking about how you deliver cancer-related follow up care for breast or colon cancer survivors, how often do you:</p> <ul style="list-style-type: none"> • Provide the patient with a written follow-up care plan summarizing their past treatment and recommendations for future care and surveillance • Experience difficulties transferring patient care responsibilities between you and the PCP <p>In your practice, how often do you encounter the following problems when caring for breast or colon cancer survivors who have completed active treatment 5 or more years ago?</p> <ul style="list-style-type: none"> • I don't have adequate knowledge or training to manage my patient's problems <p>SIRC team members recommended 22 measures (none are available on SIRC)</p>
15. Supportive feedback mechanisms	Engagement in feedback loops in which implementation and outcome data are	Goals and feedback: 0 measures on GEMS and	

Constructs	Our definition	Availability of measures	Other Items
	<p>routinely collected and used to make modifications to program delivery, content, capacity, and infrastructure of the host</p>	<p>22 recommended by SIRC team members</p>	<p>website). Below, we provide a few examples of measures (specific items are not available because we do not have access to full versions of most measures).</p> <p>TIDIRH Evaluation</p> <p>TCU Workshop Evaluation Forms (TCU WEVAL-D4)</p> <p>Session Report Form</p> <p>Teaching Evaluation Questionnaire</p>

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